Dear Sarah (and the other wonderful people of WiSE!):

On August 12th, the Young Researchers Program graduated this year’s nine outstanding high school students. The students proudly presented their remarkably professional posters detailing their summer research and impressed the grad students, faculty, and staff who attended in addition to their parents and friends. We are very proud of these students’ accomplishments and look forward to hearing about the great things they end up doing following their high school graduations.

For the third year since we started this program, students unanimously reported at the end of the program (in anonymous surveys) that the program made them:

- More excited about science
- More likely to go to college
- More likely to become a scientist
- Want to do research in the future
- More aware of the world around them
- More confident in their abilities

We consider this to be a great success, and a testament to how effectively this program encourages these local students to go to college and pursue careers in science. Indeed, last year’s graduates (class of ’11) are starting their freshman years at four-year universities this fall and all of them that we were able to get in touch with reported that they plan to major in a science field. Many commented what a huge impact the Young Researchers Program had on their decisions and options.

In addition to the impact this program has on the high school students, the graduate student mentors involved in the program report that they also got a lot out of the program. Explaining their research to a student with only a very basic science background helps the mentors better understand their field and helps them better communicate the significance of what they are doing. Being around students who are so enthusiastic and excited about the science and the research is incredibly motivating.

We are sending you this note as a sincere thank you to you, to Dr. Golubchik, and to WiSE for supporting the Young Researchers Program again this summer. This program would not have been nearly as successful without your financial backing and moral support. It also means a lot to
the high school students that programs like WiSE have made such an investment in them and their futures.

A few WiSE-relevant statistics on this year’s program:

• Four of the nine high school researchers were young women
• Two of the ten graduate student mentors were women, both of whom mentored female participants.

The WiSE funds were used to:

• Provide a summer half-fellowship to one female graduate student mentor (Emily Mortazavi), who mentored Jeanery Monterroza (a young woman who will be a first-generation college student).
• Provide a stipend for one female high school student (Maria Gonzalez) who worked with Michael Kaplan on a project using computer modeling to simulate the initiation of subduction zones.
• Offset some of the costs of running the program (printing, food for the workshops and poster symposium).

We have attached a few photos of our students in addition to letters from your sponsored high school and graduate students. More photos are available on our website, and we have also included copies of our students’ posters as you requested. Thank you again for your generous support!

Sincerely,

Laurie Chong
Ph.D. Candidate, Earth Sciences
Program Coordinator

Amanda Liss
Ph.D. Student MEB
Program Coordinator

Will Berelson
Professor, Earth Sciences
Program Director

USC Young Researchers Program
http://youngresearchers.usc.edu/

Attachments:

1. Student photos
2. Student & project profiles
3. Summer summary from Emily Mortazavi
4. Summer summary from Maria Garcia
5. Student Posters
<table>
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<tr>
<th>Photos from the 2011 USC Young Researchers Program</th>
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<td>More photos are available on our website: <a href="http://youngresearchers.usc.edu">http://youngresearchers.usc.edu</a></td>
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<th>The students at Catalina Island.</th>
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<th>The students at JPL</th>
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<th>Best Poster winner, Christine Munoz</th>
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# 2011 Program Participants

## Juan Bravo
- **Department**: Ocean Science
- **Host Lab**: Sanudo-Wilhelmy Lab
- **Grad Student Supervisor**: Nick Klein
- **Project Title**: Metalloenzymes and trace metal chemistry
- **Project Description**: Primary focus was placed on analyzing imported products by ICP-MS for high levels of toxic metals such as lead to test whether lower safety standards, relative to the U.S., consequently lead to lower product safety. Of secondary focus was testing, again, through ICP-MS, drinking water from local parks to not only see the change in toxicity relative to time, but also to test the effectiveness and impact of water filters on those levels.

## Jander Cruz
- **Department**: Marine & Environmental Biology
- **Host Lab**: Capone Lab
- **Grad Student Supervisor**: Mo Morando
- **Project Title**: N-fixation in marine microbes
- **Project Description**: In this project, we will be identifying organisms that are actively fixing nitrogen by labeling these microbes with stable isotopes. By using this method, we will be able to distinguish organisms that do assimilate the labeled substrate from organisms that don't. We will then provide a more accurate method in order to prove our hypothesis.

## Teresa Duarte
- **Department**: Physics
- **Host Lab**: Takahashi Lab
- **Grad Student Supervisor**: Anirban Das
- **Project Title**: Using Pink Diamond to detect small magnetic fields and break computer codes
- **Project Description**: Using Pink Diamond to detect small magnetic fields and break computer codes.

## Maria Garcia
- **Department**: Earth Sciences
- **Host Lab**: Becker Lab
- **Grad Student Supervisor**: Michael Kaplan
Project Title: Using Computer modeling to understand earthquakes
Project Description: We are investigating the conditions necessary for the initiation of subduction. We are using a two dimensional finite difference method written in Matlab with visco-elasto-plastic rheologies.

Miguel Molina

Department: Earth Sciences
Host Lab: Edwards Lab
Grad Student Supervisor: Roman Barco & Andrew Gross

Project Title: Fe-oxidizing bacteria
Project Description: My project is based on a oxidizing micro-organism called Mariprofundus ferrooxydans. My objective is to observe their life cycle in different arsenic (a toxic chemical element) levels and figure out if they are capable of adapting to such harsh conditions.

Steven Linares

Department: Neuroscience
Host Lab: Schweighofer Lab
Grad Student Supervisor: Amarpreet Bains

Project Title: Modeling action potentials in neurons
Project Description: Steven implemented a computational model of the voltage-sensitive ion channels in a neuron's axon. These channels allow current to flow in and out of the axon and give rise to an action potential, which is a voltage spike that travels down an axon and causes the neuron to send a signal to the next neuron. The action potential is a major component of electrical signalling in neurons.

Jeanery Monterroza

Department: Earth Sciences
Host Lab: Lund Lab
Grad Student Supervisor: Emily Mortazavi

Project Title: Magnetism in sediments
Project Description:

Christine Munoz

Department: Earth Sciences
Host Lab: Caron Lab
Grad Student Supervisor: Diane Kim

Project Title: Marine Microbial ecology and food web structure
Project Description: My name is Christine Xolotl Munoz. I am an incoming Senior at Animo Leadership Charter High School and I am working in David Caron's Lab under the mentorship of Diane Kim. I am focusing on utilizing levels of Chlorophyll as a proxy for phytoplankton biomass from samples that come in from local marinas, harbors and piers. My research includes chlorophyll measurements and microscopy of incoming samples. I am able to identify RELATIVE abundances of phytoplankton species.
and monitor local ecosystems for the presence of potentially harmful algal bloom causing organisms. Through my observations of incoming samples I am able to identify the abundances of different plankton species and whether or not they are harmful to local ecosystems, since many of the sites have experience HABs (Harmful Algal Blooms) in the past.

Jamal Younus

Department: Ocean Science
Host Lab: Sanudo-Wilhelmy Lab
Grad Student Supervisor: Nick Klein
Project Title: Metalloenzymes and trace metal chemistry
Project Description: We tested water at five local parks for high concentrations of metals, such as lead. At each park, six water samples were collected at five different time intervals. Water is allowed to run continuously between water samples, so we could measure how the concentration of certain metals change overtime. In addition, one sample from each park was filtered through a Brita filter to measure how much lead and other metals it would remove from the water.
To whom it may concern:

I would like to express my appreciation for receiving the WiSE Fellowship for participating in the Young Researcher’s program this summer. By having this support I was able to avoid the time burden of a teacher assistantship. This allowed me to focus on my research as well as mentor a high school student. Furthermore, with this fellowship I am able to travel to Oregon State University to use the cryogenic magnetometer in Dr. Joseph Stoner’s Paleomagnetics Lab.

As my first summer as a graduate student I believe it was benificial to immerse myself in my research. My project to investigate the paleomagnetic variation in the high latitudes advanced greatly this summer with the work I was able to accomplish. My project uses the sediment cores from IODP Expedition 323 (Bering Sea Paleoceanography). I made measurements on the rock magnetic properties of the upper 1.5m sediment cores U1345, U1340 and U1341. This is important to determine whether or not the magnetic minerals have undergone any chemical (oxidation or reduction) or physical changes (dissolution and reprecipitation), which are common in the upper sections of sediment cores. In addition, these measurements may detect the presence of magnetite-producing bacteria. I found that there is evidence of dissolution in all cores. In addition, the data from U1345 implies the presence of bacterical magnetite.

Mentoring a high school as been and enriching and exciting experience. My student, Jeanery Monterroza, is a motivated and enthusiastic student. Her excitement and interest in science has lead me to have a deeper understand of my subject field. Explaining the concepts of paleomagnetics and rock magnetics to her in a way that she could understand has forced me to think in different way about concepts that I have taken for granted.

Thank you again for the opportunity to center my attention on my research and the experience of one on one mentoring. That has
solidified my passion for research and teaching.

Sincerely,

Emily Mortazavi
Dear WiSE (Women in Science and Engineering),

I want to thank you for giving me the opportunity to receive a stipend provided by you. It has been a great help for me and my family. We are going through economic problems because both of my parents are misemployed. I thank you so much for your help. I really appreciate it. The USC Research Program helped me in my ways. It helped me explore more in the science field and made me want to pursue a career in science in the future. Science is a very interesting field; you can explore anything that comes to your mind. That’s the great component about it. My project was to test if subduction could occur between a young lithosphere and an older lithosphere. This project was very constructive because I learned a great variety of things that I didn’t know before. So now if anyone comes up to me and asks me anything involving Subduction or Tectonics plate I could respond to them in a better position. So I thank everyone who made this program possible because it was a amazing experience and I would like to do another research program with USC or anywhere else. I will never forget this experience it has brought me many good thing to my life. I would recommend this program to all my friends that are involved in science. I know that it will be a fantastic experience for them as well. There is no way I will ever pay all you guys for this experience. Also Monday seminars were very helpful to me because I learned more of how colleges work and what you can do to get into them. I also learned to open up and talk in a big crowd which I was nervous about at first but then felt like in family. I want to thank you once again for the stipend it has been a great help for me and my family. I would’ve hoped to actually meet you to thank you but it wasn’t possible. Thank you very much!

Sincerely,

Maria Garcia